American School
of Classical Studies
at Athens

THE GABLES OF THE PROPYLAEA AT ATHENS[1]

[PLATES IV–V]

I. THE CENTRAL BUILDING

WHEN Spon and Wheler entered the Acropolis early in the year 1676, they beheld directly above them "a beautiful building, which some regard as the Arsenal of Lycurgus. Perhaps they have their reasons, but I to be sure have mine for not believing them; for I am of the opinion that it is a temple, because it has a façade and a pediment like others." Thus writes Spon,[2] but Wheler[3] rightly assumes that it was the Propylaea. The eastern façade had fallen long before, about 1645;[4] its remnants must have been mercifully buried by dé-

[1] What was intended to be the final work on its subject, *Die Propylaeen der Akropolis zu Athen* (Berlin, 1882), by Richard Bohn, has left much to be desired. Almost immediately after its appearance, in protest came the masterly articles by Wilhelm Dörpfeld, 'Das ursprungliche Project des Mnesikles' and 'Über die Gestalt des Südwestflügels' (*Ath. Mitt.* X, 1885, pp. 38–56, pls. II–III; pp. 131–144, pl. V). Recently the American School has begun a detailed study of the building; Mr. Wood has definitely settled most of the still undecided questions in the design of the wings. For the central building we still are accustomed to rely upon Bohn; yet for practically every detail that is not actually *in situ*, Bohn needs to be corrected; and now that the reconstruction of the building has commenced, even small details have become of vital importance. The following is the result of the study of scattered stones on the Acropolis; the subject itself is due to a suggestion by Mr. Hill that two remarkable stones (H and J on PLATE V) might indicate what I have called a projecting tympanum wall. To avoid lengthy references, I mention here the other works which will concern us later: Stuart and Revett, *The Antiquities of Athens*, II, London, 1787, ch. V, pp. 37–42, pls. I–XI; J. Hoffer, in Förster's *Allgemeine Bauzeitung*, VI, Vienna, 1841, pp. 119–125, pls. cccxc–cccxcvi; F. C. Penrose, *The Principles of Athenian Architecture*, first edition, London, 1851, and second edition, London, 1888.

[2] J. Spon, *Voyage . . . de Grèce*, Amsterdam, 1679, II, p. 106.

[3] G. Wheler, *A Journey into Greece*, London, 1682, p. 359.

[4] J. R. Wheeler, *Cl. R.* XV, 1901, pp. 430–431.

bris, for they exist in large proportion to this day.[1] But the west façade was then complete; and since the ceiling of the west hall was still in a condition to attract the admiration of Spon and Wheler, its opposite support, the wall with the five gates, must have been in good preservation. We have sketches, showing the view from the west, made before and during the Venetian siege of 1687,[2] and immediately thereafter Verneda[3] described the building and gave some measurements. But this was the last mention of the last remaining gable of the Propylaea. The entire superstructure probably collapsed during the siege, and after the Venetians had retired, Turkish drills[4] made short work of the fallen remains. Stuart and Revett in 1751–53 saw the columns of the west hexastyle completely preserved;[5] then, shortly before Dodwell's visit in or about 1806, the four central columns were deprived of their capitals and three upper drums,[6] and in that condition they still remain. The two angle columns still support the epistylia between them and their antae, and on the north return a part of the frieze remains *in situ*. A fragment of epistyle face, another of its filler, a few blocks of Ionic epistyle returns which backed the Doric frieze, and portions of all three angles of the pediment with their acroterion bases, — these to-day must represent the west pediment. Although this was the last to fall, what we have of the superstructure is practically nothing, and for information we naturally turn to its exact replica, the east façade.

The superstructure of the east façade, though destroyed several years before that on the west, has had a better fate; and it

[1] Bohn, p. 20: "The east front carried a gable, but of this, as of the rest of the superstructure, only a few remains are preserved — some geisa, pieces of sima, and one block of the tympanum wall." The difference at the present time is in part due to the Acropolis excavations of 1885-90.

[2] Omont, *Athènes au XVII^e siècle*, Paris, 1898, pls. 29, 31, 36, 37.

[3] Farnelli, *Atene Attica*, Venice, 1707, p. 316.

[4] It is to be noted that this was the common fate of the west façade, of the upper part of the central wall, and of the ceiling; of these parts comparatively few fragments are left, and they frequently have been split by drills; so probably all fell at one time. The fragments of the east façade, on the other hand, show fractures only and no drill holes, and are in large part preserved.

[5] *Antiquities of Attica*, II, ch. V, pl. 1.

[6] Dodwell, *Tour through Greece*, I, p. 313.

is at this point that the Greek Archaeological Society recently began the restoration of the Propylaea. Here the six columns are practically complete, even to their capitals, except that of the column next the southeast angle; and this is preserved, a portion in the British Museum[1] and a fragment in Athens. Above the columns remain the inner facing of one span of the epistyle, a fragment of the outer face at the northeast corner, and portions of the return epistylia on both sides. The fragments now on the ground are so numerous that a reconstruction is easily possible, and the reassembling of these fragments reveals to us a few important principles of Greek construction and engineering (PLATE IV).[2]

Each span of the epistyle was normally composed of three beams set side by side — the epistyle face, its *antithema*, or backer, and the filler which lay between. But on account of the width of the central intercolumniation, the beams composing the epistyle here, necessarily half as long again as usual, were strengthened by being made fifty per cent thicker, so that the filler was here lacking; to diminish the weight, moreover, each of these colossal members has much of the useless material hollowed out in the manner of modern steel channel beams, where for some distance above and below the middle the strain from flexure is very slight. Throughout the superstructure we shall meet similar expedients for decreasing the load distributed over the central intercolumniation, which, in Greek Doric architecture, is second in size only to those of the Temple of Apollo at Selinus.[3] Both these blocks of the central span are preserved,

[1] *Brit. Mus. Catalogue of Sculpture*, I, p. 260, No. 433.

[2] PLATE IV shows the reconstruction of the superstructure of the east façade with the original fragments. At the date of writing, August, 1909, nothing has actually been replaced on the building, though columns and walls are being straightened. Such new stones as are now prepared for insertion with the old are shown with their diagonals drawn. The capitals of the columns are shown in their original orientation; I, III, and IV are to be turned so that the original west sides will face east, and V and VI are to have the north sides toward the east. Capital II will be new; the plan of the original abacus I owe to the kindness of Mr. A. H. Smith, Keeper of Greek and Roman Antiquities in the British Museum.

[3] Excluding the Olympieum at Acragas, where the epistylia were not beams, but were built up in coursed masonry, supported by the walls which filled the intercolumniations.

the outer face in two pieces; they were the first members of the entablature to be set in place, and therefore could be freely dowelled at both ends to the abaci of the capitals. Then they were clamped to each other at three points along the top and also, an extra precaution, in the vertical planes of the end joints. The epistylia next on the north and south were then lowered into place, pried against the central blocks, to which they were clamped at the ends, then clamped to each other along the top, and dowelled at their only free end. This same process was continued around the angles until the return epistylia had been completed.

The frieze shows similar precautions for relieving the central span of as much weight as possible, and here the attempt is so successful that the epistyle actually supported only the interior cornice and the ceiling; the weight of frieze, geison, and pediment was transmitted directly to the columns. For this purpose the central part of the frieze was composed of beams like the epistyle, merely decorated with triglyphs in relief.[1] A joint between a pair of these beams came exactly over the middle of the central span, as is shown by a dowel and a pry-hole on the epistyle below, 2.720 m. from the axis of either column; the next frieze joints toward north and south are shown by dowels on the epistylia to have been 2.720 m. outside the same two columns. Thus each of the frieze "beams" nearest the centre was a cantilever 5.440 m. long, exactly balanced with its centre above the axis of a column, and to be self-supporting they needed only to be evenly loaded; that south of the centre was laid first and dowelled at both ends. The joints at the ends of these cantilevers, necessarily coming exactly in the centres of metopes, were concealed by cutting back at these points and inserting loose metope slabs in grooves in one of the usual Doric methods. Of the two cantilevers, we have practically the entire length of that on the north; the other lacks only the triglyph and half metope at its south end. The rest of the frieze was built in the ordinary way, a triglyph and a metope-backer combined in a single block, with grooves into which the loose metopes were dropped.

[1] These were noted by Hoffer, *l.c.*, p. 121, and Bohn, *l.c.*, p. 20.

The *antithemata* of this course have an anathyrosis joint with the frieze and were clamped to it; but their west faces, with which nothing came into actual contact, are roughly picked with drafted edges. Of these we have two long fragments which fit together and form a great beam 5.440 m. long; it corresponded exactly to the frieze cantilever south of the centre of the façade, and, like it, was the first block laid in the series (with dowels at both ends); its companion to the north is missing.

Resting partly on the frieze blocks and partly on their *antithemata* were the usual Doric mutular geisa, in blocks 0.907 m. wide, each containing one mutule with a *via* (except the angle blocks); a symmetrical block with a mutule between two *viae* made the transition from the southern blocks on which the *via* was cut at the left of the mutule, to the northern blocks on which it was cut at the right. The plan of the dowel-holes and pry-holes on the tops of the frieze and *antithemata* (PLATE IV) shows that this symmetrical block was exactly in the centre, a rather unusual fact; in the east front of the Parthenon it is as much as nine blocks north of the centre.[1] We still have a Propylaea geison with a *via* cut on each side of the mutule, but its top finish and its height (that of the geisa forming the pediment floor is 1 cm. greater) cause us to assign it to one of the side returns; the central geison block of the façade then is missing.

The tympanum was constructed of orthostates, as was usual on the Greek mainland. Only one stone was known to Bohn,[2] and he was forced to obtain the slope of the pediment from a lower angle sima block with the acroterion base. We now have five large tympanum fragments, one from the south half and four (two of which fit together to form a single block) from the north, and these allow us to form a more accurate estimate of the slope. This is not the place to consider the problem in all its details: Figure 1 will show the method,—allowing for the horizontal curvature, and fitting together the existing stones by means of dowel-holes and pry-holes, and in a few cases setting-lines, until all find their original places. It

[1] *Ant. Denk.* I, pl. 58 *c*; east block No. 22.

[2] Bohn, *l.c.*, p. 20.

will be sufficient to state the slope which resulted, in comparison with those given by Penrose and Bohn:

Penrose	0.241 per metre = 1 in 4.142	13° 33′ 00″
Bohn	0.237 per metre = 1 in 4.211	13° 20′ 00″
Present study . .	0.240 per metre = 1 in 4.167	13° 29′ 40″

The greatest deviation, the height of the façade to the apex, is 0.011 m. less than that given by Penrose and 0.034 m. more than that given by Bohn.

The numbers on Figure 1 give the order in which the various stones of either half of the pediment were set in place,

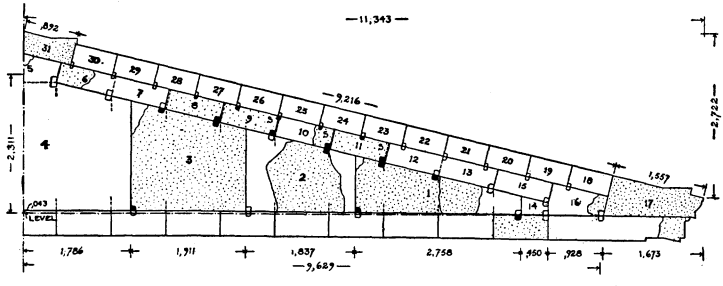


FIGURE 1. — RESTORATION OF EAST PEDIMENT, NORTH HALF.

as evidenced by the dowel-holes and pry-holes. The three tympanum orthostates laid first on each end of the pediment were, as we know by the T-clamps and the anathyrosis joint at their tops, backed by a wall, likewise constructed of orthostates as in the Erechtheum; one block from the south end still exists, and gives the thickness of the backing wall as 0.532 m. In the centre of the tympanum was a space of 3.572 m. to which no extant fragments belong. Though there still remains a tiny piece of the apex geison (5) showing that the two slopes were cut on a single block, — while the sima above (31) had a joint in the centre, — it is not enough to decide whether there was or was not a joint in the centre of the tympanum. We here miss the evidence which the lost central geison block of the pediment floor could have given. But dividing this central space into halves would make each of them much narrower than the other orthostates of the tympanum,[1] whereas giving the full space to

[1] In cases where a joint comes in the centre, the two central slabs are equal to the others at Aegina (Furtwängler, *Aegina*, pl. 34), slightly wider in the

a single stone, as in the "Theseum"[1] and the temple of Nemesis at Rhamnus,[2] makes it dominate the others, and also, acting as a beam, throw less weight on the long epistyle below. This would account for the exceptional length of the central space in the Propylaea. It seems especially probable when we note from the dowels that, contrary to usual practice, the central space was in this case closed last, so that it would naturally have been done with one stone. On the orthostate next adjoining, moreover, a peculiar cutting appears at the back,

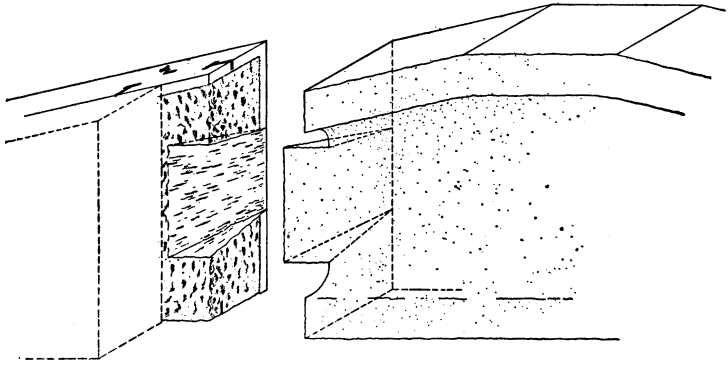


FIGURE 2. — KEY OF CENTRAL SLAB OF TYMPANUM, FROM BEHIND.

as if the central block had been keyed into it to prevent a forward inclination (Fig. 2). A similar case appears in the Parthenon, where the central orthostates, normally 0.42 m. thick, are hollowed out at the back until they are only 0.28 m. thick, their full thickness remaining only at the top and bottom edges; the centre of gravity was then so far from the centre of the bed, that to prevent any tendency to fall forward the orthostates were secured to the backing wall by iron clamps at intervals in the vertical joints.[3] We must suppose that this same hollowing, for the sake of lightness, occurred in the Propylaea. The substitution of a stone key for iron can be explained only by the omission of the backing wall over the

Parthenon (*Ant. Denk.* I, pl. 58 *c*), and much wider at Bassae (Cockerell, *Bassae*, pl. 3).

[1] Sauer, *Das sogenannte Theseion*, pl. 2.

[2] *Antiquities of Attica*, ch. VI, pl. 2.

[3] Penrose, *Principles*, 2d ed., pp. 45–46, pl. 16.

central intercolumniation, decreasing the load even more. This omission of the tympanum backers in striving for lightness was paralleled in the central part of the west pediment of the Erechtheum.[1]

Further evidence is to be found when we attempt to bring these masses into equilibrium. It has been noted that the frieze cantilevers, in order to perform their function, needed to be symmetrically loaded. The horizontal geison in short blocks formed an evenly distributed load, and likewise the raking geison, when prevented from slipping by the heavy angle acroterion blocks; only the tympanum therefore affected the equilibrium.[2] If for a moment we were to suppose that the backing wall were continued behind the central slab of the tympanum, it would be found that while on the outer half of each cantilever the load, with a volume of 3.606 cubic metres, was 9743 kilogrammes, that on the inner half (under the centre of the pediment) would have been, with a volume of 5.397 cubic metres, 14,584 kilogrammes. The centres of gravity, moreover, would be so situated as to increase the disproportion; on the outer half of the cantilever the moment, in terms of volume (in cubic metres) times distance from centre of supporting column (in linear metres), would be 4.495, and on the inner half 7.749. The system of cantilevers, in this case, would have been useless. Statical reasons thus agree with the evidence from the form of the stone key in showing that to decrease the weight the backing wall was omitted at the centre. But the tympanum slab alone, if of the usual thickness, 0.485 m., would obviously have given a bed too narrow for the raking geison blocks above. It is to be noted that in the analogous case of the west pediment of the Erechtheum, the building accounts state that an angle block of the tympanum and the slab between this and the central slab were both 1 foot thick, and that their *antithemata* were likewise 1 foot thick; but the central slab itself had no *antithema*, and was thickened to $1\frac{1}{2}$ foot to give a bed for the geison. Yet the total decrease in weight was considerable, and the reason for this unusual con-

[1] Jahn-Michaelis, *Arx Athenarum*, *App. Epigr.* 26, ll. 27–40.

[2] Any inequalities in the distribution of the weight of the central acroterion and the roof tiles could be allowed for in the wide bed above the column.

struction was much the same as in the Propylaea. If the central slab in the Propylaea is likewise thickened 50 per cent, to $2\frac{1}{4}$ feet or 0.736 m., we find that the moment of the central mass on the inner half of each cantilever is reduced from 7.749 to 5.592, more nearly, but not sufficiently, approximating the 4.495 of the outer half. But the very existence of the "key" implies the hollowing of the central slab behind to lighten its weight. The probable amount of this hollowing may be determined as follows: the moment of the mass on the inner half of the cantilever is to be reduced by 1.097 (5.592 − 4.495); the centre of gravity of the half of the central slab concerned is about 1.83 m. from the centre of the supporting column; and 1.097 ÷ 1.83 gives the amount of marble to be cut out as 0.599 cubic metre. Leaving at the top and bottom a strip about 0.30 m. wide and of the full thickness of the stone, as in the Parthenon, we find that the rest of the surface must be hollowed out to a depth of about 20 cm., or 27 per cent of the original thickness of the slab. In the Parthenon much thinner slabs are cut out to a depth of 14 cm., or 33 per cent of the whole. According to these data I have restored the central slab as in Figure 2;[1] its general thickness, due to the hollowing, is practically that of the ordinary tympanum slabs, but a broad base is added, and at the top a broad shelf for the geisa.

[1] The widened central intercolumniations of some of the Ionic temples of Asia Minor must have required similar precautions, but for them we have little evidence. Great engineering skill alone could overcome the difficulties presented by, for instance, the sixth century temples at Ephesus (restored in *British Museum Excavations at Ephesus*, 1908, Atlas, pl. 13) and Samos, and Hellenistic examples at Ephesus and Sardis, in which the intercolumniations gradually widened from angles to centre, where the span is 8.57 m. at Ephesus! In a later type, the central intercolumniation alone was widened, as in the Propylaea at Athens; at Magnesia it was $1\frac{1}{3}$ times the usual intercolumniation (5.25 and 3.94 m., Humann, *Magnesia am Maeander*, p. 45), at Alabanda $1\frac{2}{3}$ times (3.794 and 2.710 m., unpublished details), somewhat less at Aizani (Texier, *Asie Mineure*, I, pl. 28) and Aphrodisias (though not so restored in the publications). At Magnesia alone we have the evidence; a doorway was cut in the centre of the tympanum, 1.35 m. wide and 2.45 m. high (Humann, *l.c.*, pp. 47, 60, 67), greatly relieving a span which was about as great as that in the Propylaea. In Graeco-Roman work in Asia Minor, the central epistyle was frankly removed and an arch substituted for it, as at Termessus (Lanckoronski, *Städte Pamphyliens und Pisidiens*, II, pl. 4), the triumphal arch at Damascus, and later work in Syria (H. C. Butler, *Architecture and Other Arts*).

Our fragment of the apex geison preserves at the top the two slopes cut on the same stone, but the bottom is broken away. When, in other buildings, the tympanum had a central joint, such a geison had its bottom cut as a saddle fitting over the joint.[1] But when the tympanum had no central joint, as in the Propylaea, such a geison seems to have been a pentagon with a wide base formed by the apex of the tympanum, which was truncated to receive it; this we find in the "Theseum,"[2] and an even more important analogy occurs in the Propylaea themselves, where in the gable which backs the east portico the apex of the tympanum is preserved with the same truncation (PLATE V, *C*). The central orthostate of the tympanum then assumes the hexagonal shape shown in PLATE IV. The first raking geison laid was this at the top of the pediment, dowelled on both sides; then the blocks on each side were lowered into place with tongs, pried against it, and dowelled only at their lower ends. Thus were set stones Nos. 6 to 13. Next came a small block in the angle of the tympanum, No. 14, against which both the tympanum slabs and their backers stopped, so that it must have been 1.021 m. from front to back; we have the backer which stopped against it at the south end of the tympanum (see PLATE IV), with a joint 0.318 m. high,[3] which exactly fits the slope where a preserved setting line on a mutular geison determines the position of the corresponding joint at the north end of the tympanum. After geison No. 15 the combination block 16, of which we have a small piece, came; it is restored on the analogy of a similar block in the gable above the gate wall (PLATE V, *A*). The angle block No. 17 was laid last and dowelled from the back with the special T-dowel used at angles.[4] The construction of the block must here be specially noted; to avoid a feather edge, the end block of the raking geison, instead of being cut on the angle horizontal geison below, as in the "Theseum," Erechtheum, temples

[1] Furtwängler, *Aegina*, pl. 34; Cockerell, *Temple at Aegina*, pl. XI, 7.

[2] Sauer, *Das sogenannte Theseion*, pl. 2; Durm, *Constructive Details der griechischen Baukunst*, Berlin, 1880, pl. 1.

[3] It has a relieving surface on the bottom as on the tympanum slabs, showing that it was set on the pediment floor and not on other courses, as in Figure 2, for instance.

[4] Cf. *A.J.A.* X, 1906, p. 51.

at Aegina and Bassae, etc., is cut on the same block as the angle sima, leaving the top of the horizontal geison flat. The same construction was carried out in the Parthenon,[1] but there the angle block has a rebate into which fits the sima next above. In the Propylaea no such rebate occurs (except for the overlap at the back of the sima); sima and geison joints both coincide at the angle block and are spaced from it.

In the case of the raking sima blocks the process was reversed; the first block laid was this at the angle, and then the blocks were successively pried from above and dowelled at the upper ends, the lower ends overlapping for about 10 cm. With the positions of the lower angle and the apex fixed, 11.343 m. apart horizontally and 2.722 m. vertically, the length of the slope is 11.655 m. An apex sima measures 0.892 m. along the top; the lower angle sima is 1.557 m. Subtracting these two abnormal simas from the slope, we have 9.216 m. to be divided into even lengths. Many of these ordinary blocks are preserved; complete ones measure 0.702 m. and 0.705 m.; our total would allow thirteen such blocks, with average lengths 0.709 m. Each apex sima was cut with half of the acroterion base, and these were clamped together at the top; they extended back much farther than usual, not merely to the first cover tiles, so that, as at Aegina,[2] the cover tiles fitted into cuttings in the sides of the acroterion base. It is probable that they extended back so far as to counterweight the forward overhang, on account of the thin tympanum below. It is noticeable that all three acroterion bases were of the forms found at Aegina; probably similar sculptured acroteria were intended, griffins on the rectangular bases at the lower angles, and a great floral acroterion on the flat part of the base at the apex, with a heraldic support on the saddle-like projection behind; we know that such floral acroteria were used on the Parthenon.

The profile chosen for the sima was the ovolo, bounded by a fascia below and a simple moulding above, which had appeared for the first time in the Parthenon and the Temple of Athena Nike; it occurred elsewhere, but only in the Periclean period,

[1] Penrose, *Principles*, pl. 17.

[2] Furtwängler, *Aegina*, pls. 35, 47; these blocks formed the evidence for Cockerell's "hypaethron" (*Temple at Aegina*, p. 18, pls. 5, 6).

in the temple of Nemesis at Rhamnus, the Porch of the Maidens in the Erechtheum, the Periclean Telesterion at Eleusis, and the Argive Heraeum. It was, however, the natural outgrowth of the Doric profile of the early Corinthian tiles and their marble copies as on the Temple of Zeus at Olympia and the Temple of Aphaia at Aegina.[1] But the decoration was unique. Instead of following the development of the anthemion, as in the Parthenon and the Temple of Athena Nike, Mnesicles employed the egg-and-dart,[2] which had formerly been left to minor mouldings and capitals of columns; he probably chose it because its lines fitted more closely the profile of the sima. He was imitated only once, in the Porch of the Maidens of the Erechtheum; the few times that the profile was afterwards used, in Eleusis and the Argive Heraeum, the decoration went back to the anthemion type.

Novelty is found also in the method of the disposal of rain water. As was usual in the Periclean period, the sima was returned along the flanks (the Parthenon and the temple at Bassae were exceptions). But instead of the universally employed lion-head water spouts, the sima was pierced with triangular holes by cutting out the background of ornament, through which the water flowed (see Fig. 7).[3]

This same cutting out of the ornament in silhouette for the disposal of water had appeared long before on the eaves sima of Temple *C* at Selinus[4] and at Metapontum,[5] and soon after the middle of the fifth century in a building at Olympia.[6] After the Propylaea, the same scheme was copied in the egg-and-dart sima of the Porch of the Maidens.[7]

[1] Schede, *Antikes Traufleisten-Ornament*, Strassburg, 1909, pp. 12–13.

[2] See Penrose, *l.c.*, pl. 31, and Bohn, pl. XIV, 7.

[3] See Bohn, pl. XIV; Penrose, 2d ed., p. 68, Fig. 9.

[4] Dörpfeld, Gräber, Borrmann, Siebold; *Über die Verwendung von Terrakotten am Geison und Dache griechischer Bauwerke, 41ste Winckelmannsprogramm*, Berlin, 1881, pls. II, 1, III; Durm, *Baukunst der Griechen*, 2d ed., p. 135.

[5] Durm, *Baukunst der Etrusker*, 2d ed., p. 80.

[6] *Olympia, Ergebnisse*, II, pl. 120, pp. 195–196. Here, however, a groove cut deeper than the other perforations conducted the water to the centre of each tile only, and this outlet was masked by a Gorgoneion as a false spout.

[7] Inwood, *Erechtheion*, pl. 1 (in pl. 2 he wrongly restores lion heads), and the restoration by Ginain in D'Espouy, *Fragments d'Architecture antique*, I, pl. 15.

We now come to the consideration of another series of blocks which at present are scattered in the Propylaea and on the ground to the eastward. These also belong to a gable, the tympanum of which was, however, constructed not of orthostates but of coursed masonry, typical of Magna Graecia rather than of Greece itself. These blocks originally formed a part of the Propylaea, but (with one or two exceptions to be noted) have hitherto found no place in any restoration of the building. The foregoing pages leave no vacancies to be filled in the façade pediments; Dörpfeld identified the remains of the half gable of the southwest wing; and there remains for these additional blocks only the upper part of the wall which contains the five gates.

It was by means of this gate wall that Mnesicles overcame one of the greatest difficulties with which he had to contend. The Eleusinian copy of the central building, probably built under Antoninus Pius,[1] shows a scheme which may well have been a preliminary idea of Mnesicles; the whole, by means of a great platform, was built on one level, and the only gables were those on the two façades.[2] But one of the beauties of the Athenian Propylaea, as actually carried out, is that the rooms at different levels fit the natural ascent to the Acropolis. The plan called for hexastyle porticoes on inside and outside, of

[1] The colossal bust from the façade pediment was at first supposed by Philios (*Eleusis*, 1896, p. 59) to be that of Antoninus Pius. Frazer (*Pausanias*, vol. II, p. 506) and afterwards Philios (Ἐλευσίς, 1906, p. 82) thought that the building was erected by Hadrian. But the bust is not that of Hadrian, and I identify it with Antoninus Pius; the latter emperor, moreover, seems to have carried out extensive repairs at Eleusis at the instigation of the rhetorician Aristides. (Schol. on Aristides, ed. Dindorf, vol. III, pp. 308–309: Ἀντωνῖνος ὁ βασιλεὺς, ἐφ' ᾧ Ἀριστείδης ἦν, . . . τὸν ἐν Ἐλευσῖνι νεὼν πολυτελῶς ἐπεσκεύασεν.) This passage may, however, refer to M. Aurelius Antoninus, with whom Aristides was particularly influential (as in the case of the rebuilding of Smyrna after the earthquake of 178 A.D.), and who was also active in Eleusis, as is shown by inscriptions. Three fragments of the epistyle of the Eleusinian Propylaea (unpublished except by Lenormant, *Recherches archéologiques à Éleusis*, 1862, p. 46, of whose three fragments I have seen only one, with the Ω; the two others are not given by him) have remains of six colossal letters. These are sufficient to show that the dedicatory inscription was in two lines, in the second of which stood the name of Μ · Α[ὐρήλιος Ἀντ]ω[νεῖ]νος, evidently as the dedicator of the building begun by his predecessor, whose name would have occurred in the first line of the inscription.

[2] *Antiquities of Attica*, ch. II, pl. 11.

exactly the same order, and therefore of approximately similar heights, with the result that the roof of the eastern portico had to be raised $4\frac{1}{2}$ Attic feet higher than that of the western hall. The break between the two roof levels was made at the gate wall, which was carried up high enough for the purpose and formed a third gable, with a visible tympanum which required finished blocks.[1]

The present height of the gate wall is that of the lintel above the great central gate. The existing side walls enable us to

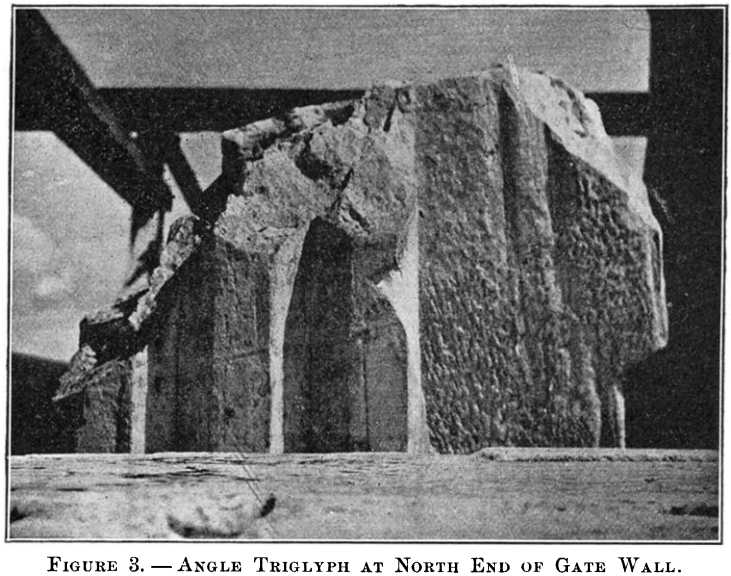


FIGURE 3. — ANGLE TRIGLYPH AT NORTH END OF GATE WALL.

restore on the gate wall,[2] an *epikranitis* course carrying the profile of the abacus of the anta capitals along the east face, backed by the interior cornice of the west hall; then the high orthostates in alignment with the epistyle *antithemata* of the east portico, faced on the west by the beams and *lacunaria* of the lower west ceiling. Opinions as to the construction above this point differ widely, for the following reason: The entablature of the east hexastyle is carried along the north and south

[1] See, for general appearance, Bohn, *l.c.*, pls. IV, VI, VII, VIII.

[2] See Figure 4 *c*. Of the courses here named only a few fragments of the *epikranitis* of the east portico are known.

sides only so far as to include five triglyphs, and then returns inward nearly in line with the middle of the thick gate wall.[1] The angle triglyph at the northwest corner is still *in situ* (Fig. 3). Upon examining it we notice, first, the weather line[2] left by the lower west roof tiles, which were cut to fit around it, showing that here at least the architect did not hesitate to allow his frieze to disappear gradually under the roof;[3] second, that the triglyph is complete, not partly joint surface and partly finished like that on the return from the west hexastyle;[4] and finally, that this triglyph has a slot to receive a metope, so that we seem to have a Doric frieze, and therefore a wall face, in the plane of the angle triglyph; that is, above the middle of the gate wall. On account of this triglyph and metope slot, Penrose[5] restored a complete Doric frieze along this wall, though necessarily most of it would be below the roof of the west hall. Bohn[6] preferred the other alternative and, ignoring the metope slot, carried a blank wall up to the edge of the triglyph. In Figure 4 appears, three times repeated, the section of the present lintel of the central gate (heavily outlined), and behind it the trace of the return of the entablature on the north flank (in broken lines); the bottom of the triglyph (which inclines inward 6 mm.) is only 0.724 m. from the east face of the gate wall. The structure above the lintel is shown as variously restored (*a*) by Penrose, (*b*) by Bohn, and (*c*) as in the present study. It will be seen that Penrose subtracted 0.065 m. behind the wall to allow a bearing for the slabs between the ceiling beams of the east portico, and restored a tympanum set back in the metope plane as in the east façade, 0.072 m. behind the triglyphs, so that his wall would be only 0.587 m. thick.[7] Bohn made the wall 0.653 m. thick, setting it back on the plane of the metope, but keeping its east face flush with

[1] Bohn, *l.c.*, pl. VI. [2] Bohn, *l.c.*, pl. XV, 5.

[3] Even at the lowest point of the slope the triglyph was buried to a height of 0.358 m.

[4] Bohn, *l.c.*, pl. XIV, 9. [5] *Principles*, pl. 29. [6] Bohn, *l.c.*, p. 20, pl. VIII.

[7] In his first edition, Penrose mistook the position of the angle triglyph and also drew the gate wall one foot too thin; the latter he attempted to correct in his second edition, merely by adding a figured dimension; the fact that his tympanum wall as drawn on his plate 30 *scales* 0.770 m. may, therefore, be neglected.

the gate wall below, which made it necessary to build over the ends of the ceiling beams. Yet even this 0.653 m. seems too slight; all the coursed walls of the Propylaea have a thickness, with *werkzoll*, of 0.880 m.;[1] and that such a thickness

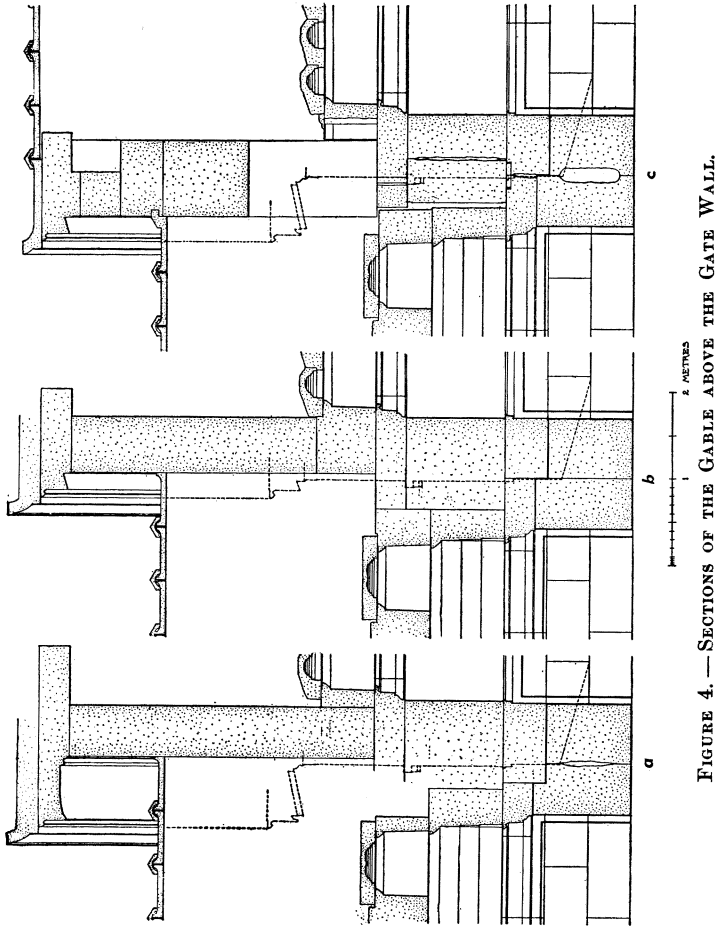


FIGURE 4. — SECTIONS OF THE GABLE ABOVE THE GATE WALL.

actually obtained in the tympanum wall is shown by the blocks later to be described (PLATE V, *C–G*, *R–L*), which formerly composed it.

[1] With the single exception of the gate wall itself, which is finished to 1.283 m. (originally 4 Attic feet, 1.30 m., with *werkzoll*).

A wall of this thickness, even if we placed it with its east face flush with that of the gate wall, must have projected on the west 0.156 m. beyond the plane of the angle triglyph. The fact that there was such a projecting tympanum wall is attested by the interior cornice of the east portico. The blocks of this cornice which formerly rested on the gate wall have a profile that is used throughout the main building; but they can be distinguished from the others by a process of elimination.[1] In this way we find for this cornice four blocks which have various lengths (1.940 m., 1.314 m., 1.195 m., and a broken piece at present 1.13 m. long), and various widths of bed (0.668 m., 0.735 m., 0.873 m., and 0.728 m., respectively); also they are treated at the back in different ways, two with anathyroses along the top, one finished smooth, and one finished with drafted edges. In spite of these differences, however, they possess common characteristics; they were secured to the stones below, not by single dowels but by pairs, unlike the two other cornice types 0.351 m. in height; each block has a T-clamp running back to some stone behind, so that the finish of the backs need not concern us (as it must have been concealed, though not perhaps in actual contact with other stones); and finally, each of the four blocks has a setting-line for a course above, with its face 0.305 m. back from the top of the course below the interior cornice. An examination of one of the blocks (Fig. 5) shows a bearing surface, "A," running back 0.375 m. for a ceiling beam of the east portico; beside this is another worked bed, "B," very narrow, for the slab filling the space between the ends of the beams; then comes the bed, "C,"

[1] Of the four types of Propylaea interior cornice with this profile:

(1) Blocks 0.491 m. high (0.140 m. of which is wall surface), 1.176 m. long, and bed 0.880 m. wide, for side walls of west hall (PLATE V), where most are *in situ*, a few on the ground, and one in British Museum (*Brit. Mus. Cat. of Sculpture*, I, p. 260, No. 435).

(2) Blocks 0.351 m. high, usually 1.200 m. long, bed 0.300 m. wide, to back the frieze of east and west porticoes.

(3) Blocks 0.351 m. high, usually 1.300 m. long, bed 0.590 m. wide, for west side of gate wall. Of these I know no fragments, the dimensions being given by cuttings on the bed prepared for them.

(4) Blocks 0.351 m. high, of unknown lengths and widths of bed, for east side of gate wall. To this series must be assigned all blocks not coming under the three other classes.

with its setting-line for the above-mentioned continuous course. Similar indications, though less well preserved, appear on the other blocks. We have, therefore, absolute proof that these came from the east face of the gate wall. The clamps which fasten them back-to-back to a course on the west side of the gate wall indicate that the tops of the two courses were on the same level, and therefore we may suppose bed "C" to have been continued on the stones to the west. One of the cornice

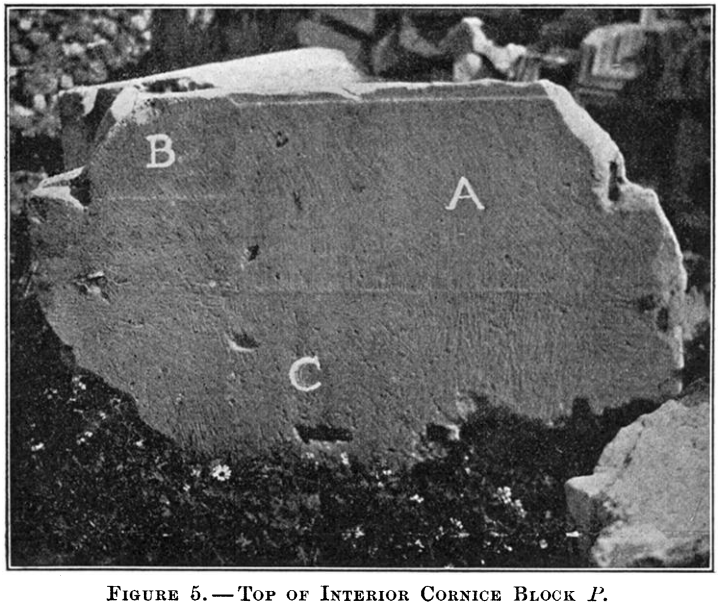


FIGURE 5. — TOP OF INTERIOR CORNICE BLOCK *P*.

blocks, *Q* (PLATE V), was cut in L-shape, and fitted in the angle at the south end of the gate wall; the short arm is now broken off, but a setting-line and a bed-cutting for its joint, on the *antithema* of the south epistyle, are 0.253 m. east of the gate wall. On the analogy of a completely preserved angle block which fitted in the southeast corner of the east portico, and was symmetrical with this, we must suppose that the short arm was about 0.246 m. long (measured on the actual bed). Therefore, the top of the course below the interior cornice (the high orthostates in alignment with the epistyle *antithemata*) was 0.253 — 0.246 = about 0.007 m. east of the gate wall, and the

setting-line on the top of the interior cornice was 0.305 – 0.007 = 0.298 m. inside the east face of the gate wall. Since the angle triglyph is only 0.724 m. from the east face of the gate wall, our tympanum wall with a thickness of 0.880 m. must have projected 0.454 m.[1] west of the line of the bottom of the angle triglyph (Fig. 4 *c*), which had always been considered as determining the plane of the tympanum. It is to be noted that, as a practical advantage, this tympanum wall is very nearly centred on the thick gate wall below.

For a moment, for confirmation, we turn to the cornice of this backing gable. This was at first supposed, naturally enough, to have been exactly like that of the façades; thus we find it given by Stuart and Revett[2] in 1753, by Penrose[3] in 1846, and by Ulmann[4] in 1875. Their great cornice with an overhang of 1.025 m., balanced on a thin wall of only 0.587 m., is very distressing (Fig. 4 *a*). But Revett had found another geison with a very slight overhang; probably he noted merely its profile, for it was published as horizontal, "a piece of external cornice which was perhaps on the south side."[5] This block still exists, lying in the Brauronian precinct south of the main building; it is, however, not a horizontal cornice, but fitted next to the angle of a gable. It was so drawn, with great inaccuracy, by Hoffer,[6] who first assigned it to the backing gable. It was unknown to Penrose and Ulmann, and Bohn searched for it without success, though he accepted Hoffer's identification[7] and so preserved the equilibrium of his thin tympanum wall, though the unsymmetrical overhangs of the cornice as seen on the north and south sides are very unfortunate. Hoffer's identification of this geison (PLATE V, *A*) is correct: the total height, 0.340 m., and the height of the separate members are the same as in the raking cornice of the main pediment, but the overhang beyond the tympanum is only

[1] 0.724 – 0.298 = 0.426 m., part of wall east of triglyph.
0.880 – 0.426 = 0.454 m., part of wall west of triglyph.

[2] *Antiquities of Athens*, II, ch. V, pl. 4.
[3] *Principles*, 1st ed., pl. 30.
[4] D'Espouy, *Fragments d'Architecture antique*, I, pl. 2.
[5] *Antiquities of Athens*, II, ch. V, p. 41, pl. VII, 4.
[6] *Wiener Allgemeine Bauzeitung*, VI, 1841, pl. 391, Figs. 36, 37; pl. 392, p. 123.
[7] *Die Propyläen*, p. 20, pls. VI, VII.

0.292 m., instead of the 0.815 m. of the main pediment.[1] That this sole remaining block should have come from a position next the angle is fortunate for us, since it has cut on the same stone, in accordance with the custom observed in the main pediments, the angle of the tympanum. Placing this in the plane of the tympanum wall (the various blocks of the thickness 0.880 m. will show that the entire wall up to the apex of the tympanum lies in one plane, cf. Fig. 4 *c*), we have the crowning moulding of the geison 0.292 + 0.454 = 0.746 m. in advance of the bottom of the angle triglyphs, or, allowing for the 6 mm. inclination of the triglyphs, 0.752 m. from the top, and 0.752 m. is

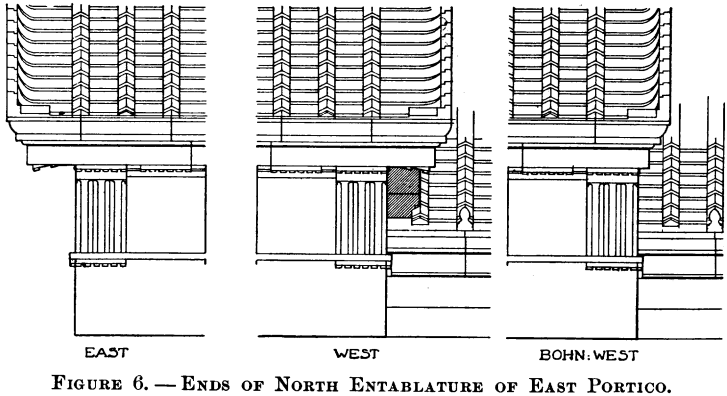


FIGURE 6. — ENDS OF NORTH ENTABLATURE OF EAST PORTICO.

exactly the overhang of the ordinary mutular geison. This coincidence lends sufficient support to the restoration of a projecting tympanum wall, and also enables us to revise Bohn's elevations of the north and south sides;[2] for, although in reality the geison of the backing gable had an overhang not much more than a third of that of the east pediment, the two were so arranged that when seen at one time, from the side, they appeared to be the same (Fig. 6). The details of this scheme must be considered later.

The sima of this gable has always been restored with a profile like that of the main pediments, though this seems too heavy for the abbreviated geison. Around the Propylaea are

[1] The tympanum of the main pediment is recessed slightly; the overhang of the geison beyond the triglyphs is 0.752 m.

[2] *Die Propyläen*, pl. VI.

six pieces of a sima which belonged to a pediment, some to the left slope, others to the right, as shown by their system of overlaps and rebates; one block has the complete length 0.700 m., and two fragments fit together and give the length 0.702 m., as in the main pediments; and the fascia below is of the typical height, 0.090 m. But the ovolo is abruptly cut off, without a moulded finish, at a height of 0.212 m. above the bed (PLATE V, *S*), whereas the typical pediment sima was 0.357 m. high. Penrose once used it to crown the walls against which the west wings lean,[1] in spite of the fact that these walls were never higher than they now appear; later he proposed that it should crown the side walls of the west hall,[2] a manifest impossibility, because we have the eaves tiles from these walls. The only possible place in the Propylaea for this sima is the cornice of the backing gable; the way in which it suits its geison may be seen in Figure 3 *c*.

With this low pediment sima meeting a higher one on the flanks of the portico, a peculiar disposition of the angle block became necessary. The top line of the flank sima must have been returned horizontally on the gable front until it intersected the sloping top of the low raking sima, as shown in PLATE V.[3] While not ideal in appearance, it is not out of character with the other makeshift schemes in this part of the building; and we have proof that this was actually done in early Doric temples, as the hexastyles at Paestum and Temple *C* at Selinus.[4]

We turn now to the discussion of the blocks composing the tympanum itself. Ten present peculiarities which lead us to assign them to this gable; three have sloping tops which formed the bed of the raking geisa, and four have cuttings for roof tiles; eight have, or had, the regular wall thickness, 0.880 m., and two are of a special width, as we shall see. Again, leaving out of the question the blocks with sloping top, they seem to have the uniform height of $1\frac{1}{2}$ Attic foot used throughout the Propylaea (two are 0.492 m., one, 0.493 m., two, 0.494 m., and two, 0.501 m. high, the variations being no

[1] *Principles*, 1st ed., p. 62, pls. 28, 34.
[2] *Principles*, 2d ed., pp. 68, 69, pls. 29, 34.
[3] Compare Figure 7.
[4] Koldewey-Puchstein, *Die griechischen Tempel*, pp. 20, 21–22, 23, 104–105.

greater than occur elsewhere in the building); and even one of the higher blocks with a sloping top has an anathyrosis for the top of a horizontal course abutting on it $1\frac{1}{2}$ foot above its bed (PLATE V, *E*). In our consideration of the east pediment we found that the apex of the tympanum was 4.990 m. above the epistyle soffit over the central intercolumniation; subtracting the interior cornice and the epistyle *antithema* (0.351 + 1.138 m.), we have the height of the tympanum wall as 3.501 m. From this we must subtract the distance from the tympanum apex to the bed of the existing apex stone (see PLATE V, *C*), 0.548 m., leaving 2.953 m., which should be divided into regular courses;[1] and we find that it gives exactly six courses of an average height of 0.492 m. It remains now to decide whether the block had the regular length too, the 1.176 m. used elsewhere in the Propylaea.[2] I think it can safely be said that this was the case. Of our ten blocks, three (*H*, *J*, and *K*) are cut in half lengths (0.585 m., 0.631 m.,[3] and 0.600 m. long); another is of complete length (1.193 m.); with the course above breaking joint at its centre, while a fifth (*N*), now broken in halves, also had the course above jointed a half block length from its preserved end. The outer ends[4] of blocks *D* and *E*, and of *F* and *G*, as placed by other considerations, are separated by intervals exactly divisible by 1.176 m.; and the interior cornice blocks *O* and *P*, which fit together, have on their top scratch lines for a stone 1.184 m. long. So we must restore a tympanum wall built of ordinary blocks $0.492 \times 1.176 \times 0.880$ m. It may be noted here that the workmanship was comparatively poor; blocks of defective marble, perhaps rejected from other parts of the building, are here used (one, *F* on PLATE V, was cut down from an original

[1] That the apex stone rested on the top of a regular course, and not in a pocket, as, for instance, in the Temple of Hera at Selinus (Hittorff et Zanth, *Architecture antique de la Sicile*, pls. 37, 46), is shown by the fact that it is dowelled at the bottom.

[2] Except in the west and north walls of the Pinakotheke, where the blocks were increased to the length 1.250 m. on account of the triglyph spacing.

[3] This is exceptionally long because it was at the south end of the wall and made up the difference caused by an off-centring of the joints, which appears plainly in the apex block *C* (PLATE V).

[4] These blocks are in themselves of special lengths, so that the ends toward the axis of the gable will not agree with the joint spacing.

length of 1.176 m., as shown by the position of the boss; another had an anathyrosis for a block to abut at right angles, but was here used as an ordinary wall block).

The apex block *C*, with the ridge beam socket, falls immediately into its place; its centre is 0.031 m. north of the axis of the gable, and here we meet a secondary axis, used throughout for the joint spacing.

Two blocks (*D* and *E*) with sloping tops and sockets for purlin beams of the east portico require more consideration. They were symmetrical with respect to each other. For their positions our evidence is that their lower beds must agree with the regular course joints, and that dowel holes on their tops must agree with joints of the raking geisa. The preserved dowel holes on block *D* indicate joints about 0.88 m. apart. Now the entire length of the raking geison on top may be obtained from the east pediment as 11.428 m. Of this the apex geison, as determined by its truncated base, occupied 0.462 m., and from the east pediment we obtain the length on the slope of the lower angle geison as 1.403 m. Against the latter fitted the preserved geison *A* at the south end, with the length of 0.815 m.; this was not the regular length of the geison blocks, but was a special length determined by the fact that cut on the same stone is a vertical tympanum wall joint which was made to agree with the other tympanum joints.[1] Subtracting from 11.428 m. our three main blocks, the remainder is 8.748 m., which will give ten average geisa of 0.875 m. Remembering that geisa were dowelled at their lower ends so that the dowel holes must be *above* the geison joints, we find that blocks *D* and *E* agree with the horizontal course lines only when placed as on PLATE V. Their outer ends fall eight regular block lengths apart; but *D* and *E* are, in themselves, shorter than usual, so that between them we have more than six block lengths.

Four preserved blocks show cuttings for the reception of roof tiles (PLATE V, *F*, *G*, *H*, *J*). Such cuttings exist also for the

[1] This is seen in a restored symmetrical geison, *B*, PLATE V, whose vertical joint is 7½ block lengths north of the centre of *C*; because of the off-centring of the joints, geison *A* is a little farther away, but for ease of workmanship the geison lengths were made uniform on both slopes and the difference taken up in block *G*.

roofs of the west wings, about 0.140 m. wide, with jagged additions for the ἰμάντες or roof boarding at the bottom and for the tiles at the top, bringing the total width in places up to about 0.220 m.; the workmanship is very careless. Our four blocks, on the contrary, have cuttings 0.075 m. wide, very carefully finished, and following the outline of each individual tile. They cannot belong to the Pinakotheke,[1] and we must assign them to the gate wall. It is important that we should know exactly what part of the tile was inserted in the cutting. In the west wings the top of the cutting with the tile outline was exactly level with the tops of the cover tiles; but the vertical risers which appear in the cuttings, instead of projecting like the cover tiles, 0.065 m. beyond the risers of the flat tiles, were exactly above the latter. Therefore, the cover tile against the wall was cut on the same stone with the flat tile. This same relation of cutting to tile we must assume in the gable above the gate wall; in fact, in no other way can blocks *H* and *J* be made to fit both the tile cuttings and the wall course levels. The section through the tiling of the west hall, PLATE V, is drawn like that of the east portico (as determined by the joints of the east pediment sima, allowing for the overlap), but $4\frac{1}{2}$ Attic feet lower; so drawn, it exactly fits the eaves tiles which rested on the geisa of the side walls.[2] A similar outline 0.105 m. above the flat tiles (the height of the cover tiles) should be the upper line of the tile cutting in the tympanum wall.

If we take first the pair of short blocks *H* and *J*, and make them fit at the same time both the course lines and the assumed tile cutting, it appears that they will do this at only one place, namely, on the lowest course with their outer ends on a line with the inner side of the angle triglyphs. They are so drawn in elevation on PLATE V, and again in plan, where the lowest course of the tympanum wall is represented in broken outline. It will be seen on the plan that *H* and *J* thus lie above the easternmost blocks of the side wall geisa of the west hall. But the top surface of these geisa is 0.094 m. below the bed of blocks *H* and *J*. This difficulty was met in the way shown in

[1] Which they could not fit in any case.

[2] One of them drawn by Penrose, pl. 34, and Bohn, pl. XII, 7.

the detail of the interior cornice angle block *Q*, PLATE V; when this is set in place, a rectangular cutting at its southwest corner falls exactly in line with the metope backer of the angle triglyph, and also in line with the back of the south wall geison, which here is finished with an anathyrosis joint.[1] On this south geison, and likewise on that at the north (see Fig. 3), a bed, raised 0.011 m., extends from the back of the stone to the edge of the angle triglyph, with a dowel hole at its outer end; the cutting in the interior cornice is 0.083 m. deep, so that bottom of cutting and top of raised bed are exactly on the same level. The exterior geison and interior cornice were then connected by a slab 0.083 m. thick, making a level and continuous bed for the tympanum wall. It appears then that Bohn was correct in refusing to recognize the metope slot on the triglyph; it is merely an ordinary angle triglyph, and its metope backer was rudely hacked off to give room at the point where the tympanum wall assumed its full thickness, and still more undercut below to allow the passing of the interior cornice.

At the outer ends of these short blocks *H* and *J* we have the returns of the projecting tympanum wall to the plane of the angle triglyph. And, in fact, these ends of the stones present finished surfaces; the tile cutting is not carried around, but for this slight distance the tile merely abutted on the stone, just as it did on the adjacent angle triglyph.[2] A restoration of this portion appears in Figure 7.[3] The arrangement of the geison at this point is worthy of notice; as it turns the corner, with the full overhang of 0.752 m., we find the usual mutule over the triglyph, and then the wall breaks forward. The geison, however, did not break out around the wall, but was carried directly along with all simplicity; the overhang as a result was reduced to 0.292 m., as we know from the raking geison.

Blocks *H* and *J* fix the ends of the tympanum wall as 19.316 m. apart, or 0.500 m. more than sixteen wall block

[1] The last block of the north wall geison is hewn off shorter and so gives no evidence.

[2] A weather line on the return of stone *J*, 0.335 m. below the top, exactly fits the eaves tile which was set against the block.

[3] This is shown from a similar viewpoint, but in its present state, by Bohn, pl. XV, 5.

lengths. On account of this extra quantity, 0.500 m., the joints in the lowest course at least could not have coincided with those of the upper joint system, which were spaced on either side of the centre of block *C*; the lower joint system was spaced from the ends of the tympanum wall. The two systems were separated, for a certain distance, by the horizontal geison. We now place the two blocks *F* and *G*, with the cuttings. They will coincide with the tile outline and with the

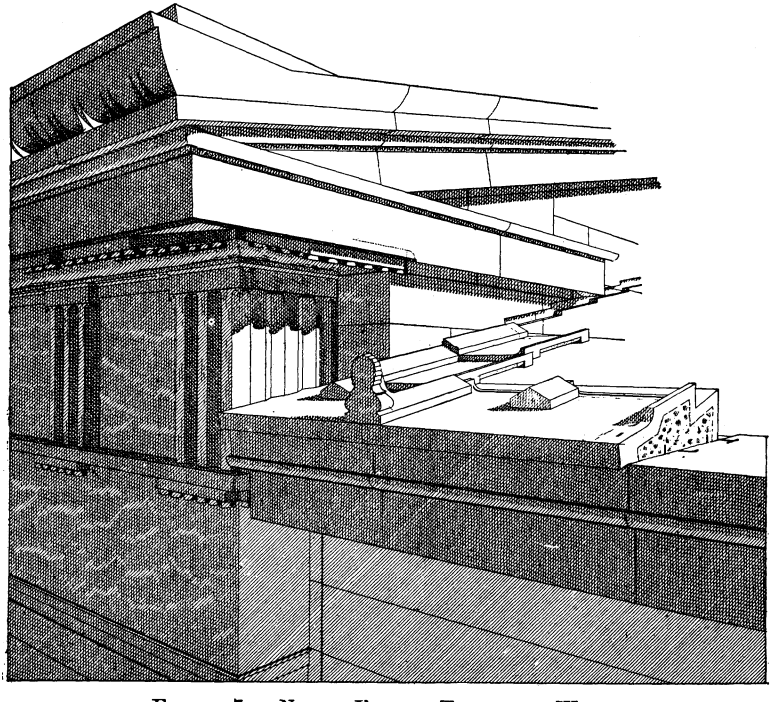


FIGURE 7. — NORTH END OF TYMPANUM WALL.

course lines at the same time only if we place them in the third course of the tympanum wall; here they occupy part of the height of the horizontal geison, which therefore probably stopped on the blocks next outside them. Like *D* and *E*, these blocks are of special length, about one metre; and when in position, their outer ends are found to fall into the upper joint system, and their inner ends into the lower joint system. Here then occurred the necessary attempt to reconcile two

systems which had nothing in common. Figure 8 shows the blocks already placed and their relations to the two joint systems; to avoid confusion the off-centring of all the joints, though drawn on PLATE V, is here omitted.

In view of the elaborate precautions for relieving the epistyle in the centre of the façade, it may well be inquired whether something to the same effect may not have been carried out

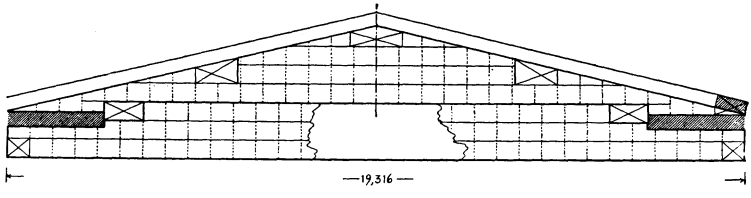


FIGURE 8. — THE TWO JOINTING SYSTEMS OF THE TYMPANUM WALL.

over the lintel of the great central gate, which is composed of a pair of beams each 6.697 m. long. The evidence from the tympanum wall is fourfold.

First, a glance at Figure 8 is sufficient to show that the lower jointing system could not have been carried through, with equal spacing, from end to end of the wall; there must have been an interruption somewhere in the middle. Blocks *F* and *G* tell us that between them the lower joint system was carried up to a height of three courses. Therefore the interruption, whatever it was, must have been of the height of three courses.

Second, there are some ordinary wall blocks, 0.493 m. to 0.494 m. high and 0.880 m. wide, which must be assigned to this wall for the simple reason that those extant are more than enough to make up for the deficiency elsewhere in the Propylaea. I shall here speak only of two which present marked peculiarities. On the bottom of one (PLATE V, *M*) appear stains taking the exact form of the lead around the clamps in the stones below it; one such trace, 0.255 m. inside the east face of the wall, exactly fits the western of the two series of clamps on the top of the interior cornice; the other is at right angles to the direction of the wall, and can only be the trace of a clamp which bound this interior cornice to the course behind it. In short, it is exactly the imprint that was given by the

clamps on the existing interior cornice block *O*. We must then place *M* in the lowest course, in the middle of the south half of the tympanum wall. It has another important characteristic, a weather line along the bottom about 11 cm. from the west face; it is due to the fact that the narrow course behind the interior cornice stopped 0.103 m. inside the west face of the tympanum wall (Fig. 4 *c*), as we know from the anathyrosis on the back of the side wall geison and the raised bed under stones *H* and *J* (PLATE V, detail *Q*). This same weather line appears on another stone, *K*, which is thus identified as belonging to the lowest course, even though it is so short that it lacks the trace of the clamp at right angles. It shows, however, the stain of a clamp connecting two interior cornice blocks. Its importance is that it is a half block, the north end with an anathyrosis joint and a clamp to the adjoining block, the south end rough, with drafted edges, and without a clamp. It is dowelled below at this drafted end, and at this same end has dowels above, so that two courses at least ended one above the other. This, therefore, forms an end of the tympanum wall toward the south, and in a very unfinished manner; but in stone *J* we already have the real south end of the tympanum wall. There must have been an opening allowing ends somewhere in the centre.

Third, block *N* of the interior cornice (Fig. 9) shows on its top two great holes; these certainly contained dowels, for they are now partly gouged out, the infallible sign of the mediaeval seeker for lead, and they show traces of having first been cut to the ordinary dowel width, and then enlarged. Instead of the usual holes 0.06 m. deep, 0.015 m. wide, and 0.08 m. to 0.09 m. long, these are 0.09 m. deep, 0.03 m. wide, and 0.13 m. and 0.16 m. long. Just south of these came the end of a wall block, as is shown by a dowel and a pry-hole; just north of them is another small dowel; in front of them was the end of a ceiling beam. Placing this cornice block in position by making its ceiling beam bed and tympanum wall joint fit the parts for which they were destined, we find that it is limited to one spot, and this is such that the great dowel holes come exactly above the south jamb of the central gate. The explanation of these dowels may be looked for in the contemporary jambs of

the north door of the Erechtheum; here the bottoms were secured by great dowels of very similar appearance, with cuttings 0.12 m. deep, 0.03 m. wide, but in a T-form 0.17 m. × 0.16 m., the base of the T reaching to the back of the jamb, so that the lead could be poured in. In our case, where the dowels were set 0.02 m. to 0.05 m. inside the line of the tympanum wall, and parallel to it, sinkages 0.008 m. deep, the full length of the dowel, led out into free space 0.025 m. beyond the tympanum wall, and conducted the molten lead evenly to all corners.[1]

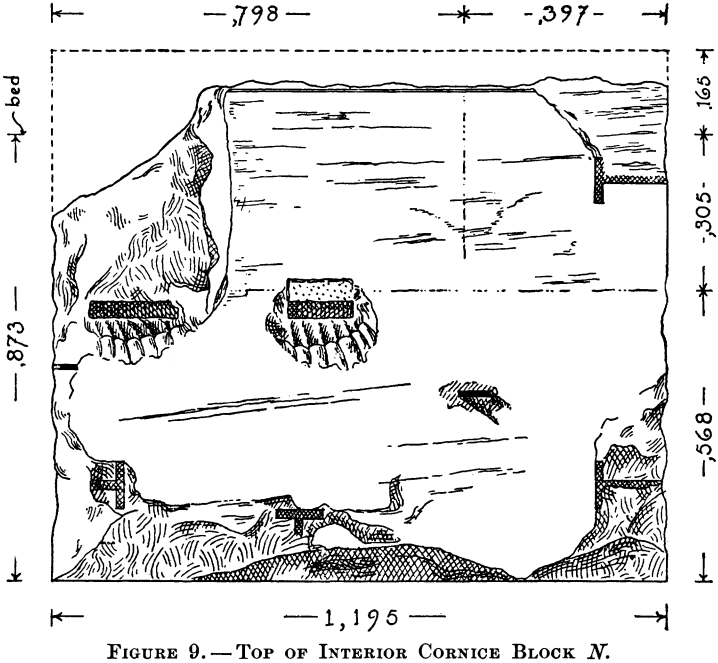


FIGURE 9. — TOP OF INTERIOR CORNICE BLOCK *N*.

It was the prototype of the Roman method, in which a narrow channel ran to one corner of the dowel. On these dowels, then, we restore piers exactly above the gate jambs; their dimensions must have been, from front to back the 0.880 m. of the wall, the width about 0.80 m., as fixed by the two small dowels (one

[1] In the Propylaea these dowels themselves were, as usual, about 0.008 m. thick, but since they had to be fixed in the bottoms of the stones above before the latter were lowered into place, inaccuracies of measurement were allowed for by making the cuttings in the lower stones 0.030 m. wide.

in the last wall block and one in the side of the pier itself), and the height, as determined by the lower jointing system on Figure 8, three courses. The distance from the interior cornice joint at the south end of this block, *N*, to the end of the tympanum wall stone, as marked by the dowel, is 0.395 m.; on the bottom of stone *K*, the distance from the interior cornice joint, as indicated by half the length of the double-T clamp stain, to the drafted end of the stone is 0.395 m. Stone *K*, then, rested on a symmetrically placed replica of cornice *N* above the north jamb of the central gate. Stone *K* and the two courses above it ended without quite coming into actual contact with the piers, and the reason is evident. That the weight of the mass above might not merely be thrown sidewise and transmitted course by course to the lintels of the lower doors, the tympanum wall was not bonded at all with the piers, which, standing above the jambs of the central gate, alone carried what we must now restore, a great lintel.

Fourth, the fact that blocks *D* and *E* are of special lengths, so that their inner ends fall short of what should be the joints by 6 cm. in each case, is still unexplained. Whatever abutted on them must have been prolonged beyond the usual joint lines, and now that we have erected the two piers in PLATE V, it appears that these unusual features were the ends of the great lintel which rested on those piers. Such a lintel must have been two courses high, and would fall into the fourth and fifth courses of the tympanum wall. In this connection comes the extra anathyrosis at the inner end of stone *E*, even with the top of the fifth course; in other words, adjoining the anathyrosis at the top of the lintel.

I think that the facts adduced above prove that there was something unusual in the middle of the tympanum wall, that here was an opening lined by heavy jambs which supported a great lintel, forming a relieving space 1.476 m. high and about 4.62 m. wide (a little greater than the opening below) above the lintel of the central gate.[1] It was entirely below the roof

[1] We may suppose that this same principle of a relieving superposed lintel was carried into execution above the longer lintels of the Parthenon doorways, although for them data have never been gathered. The method was not unique; a similar device at Magnesia has already been noted. And in the "Temple of

of the west hall, and at the same time behind and above the ceiling beams of the east portico, so that it did not need to be closed. The ridge beam of the west hall, which abutted on the relieving lintel, would not have needed a socket; as above each of the three pairs of Ionic columns, it was probably here supported by a cross-beam (*μεσόμνη*) with struts (*ὑποθήματα*). That no fragments of posts or lintel have yet been identified is not surprising when we consider the scarcity of remains of those portions of the building which fell in 1687.

The west hexastyle had a suggestion of a backing gable analogous to that of the east portico; but since here the roofs

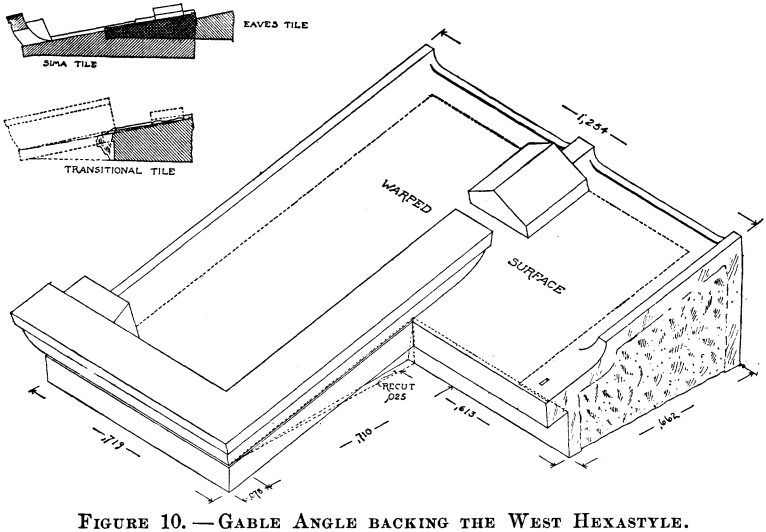


FIGURE 10. — GABLE ANGLE BACKING THE WEST HEXASTYLE.

were on the same level, the gable was extremely rudimentary. The roofs of the two proposed halls facing east were to abut on the side walls of the main building at such a high point that, although the main cornice could have been uninterrupted, the epistyle and frieze had to be omitted. Therefore the mutules disappeared from the geison, which was correspondingly reduced

Concordia" at Acragas, where a doorway is pierced in each of the four triangular walls which subdivide the roof space, that above the naos door is made wider than usual to relieve the lintel. (Koldewey-Puchstein, Fig. 156, and Durm, *Baukunst*, Fig. 141, show the similar but narrower opening over the epinaos columns.)

in overhang (from 0.752 m. to 0.584 m.);[1] and this, together with the fact that the side walls of the west hall are set 0.513 m. behind the top of the triglyph, necessitated breaking back the geison for 0.681 m. The slope of the roof therefore stopped with the eaves tiles above the reduced cornice at a higher point than with the sima tiles above the cornice of the order (Fig. 10 *a*). All the adjustments necessary here were carried out on a single stone for each side of the building; that from the south side still exists, cut as a double tile (Fig. 10 *b*). Its west joint coincides exactly with the sima tiles of the west portico, which it adjoined. The entire east half of the block, finished as an eaves tile without a sima, was set so far behind the west half as to align with the tiles above the reduced cornice.[2] To make the transition between the two, the sima returned in the form of a gable angle, but died away when it met the tile above the reduced cornice. The amount of the slope of this sima is taken up by a fascia 0.161 m. high, inserted between the hawk's beak of the geison and the overhanging nosing of the eaves tile.[3] This fascia is elsewhere cut on the geison blocks, but in our transition block it was cut with the tile so that the bed joint might correspond to that of the sima tiles.

I have here confined myself to the study of the four gables of the main building: a fifth, that of the southwest wing, has now received additional details which must be treated later. Of the two main pediments, that of the east façade has of necessity served as the type, but the same principles held true for both. It has shown us a systematic attempt to lighten the superstructure, for the width of the central intercolumniation, from soffit of epistyle to apex of pediment; using thicker epistylia[4] with an exaggerated hollowing-out of material,[5] form-

[1] For this reason also the height was reduced by omitting the sima and using a simple eaves tile.

[2] Since the eaves tile has the usual roof-tile slope, while the sima tile, about twice as long but omitting an additional tile riser, has a steeper slope, the cutting of the two on the same stone necessitated some slight warping of the surface.

[3] The acroterion base, shown by Penrose (2d ed., p. 68), was here omitted.

[4] Bohn, *l.c.*, p. 19, loses the point in supposing that the two-beam type of epistyle was continued all along the façade.

[5] Remarked by Penrose, *l.c.*, p. 71.

ing the frieze in great cantilevers,[1] and making the central orthostate of the tympanum exceptionally long, to act as a beam, lightened by hollowing behind, and with the tympanum backing omitted, until all parts above the frieze exactly balanced on the cantilevers. Another system, that of the superposed lintel, was employed in the backing gable of the east portico in the attempt to relieve the lintel of the central gate. That of the eastern façade we shall soon see reconstructed with the original stones; but the gable above the gate wall, represented by twenty-two fragments scattered about the Acropolis and by a fragmentary angle triglyph *in situ*, will probably be known only from architectural drawings.

II. The Sima of the Southwest Wing

The unexpected abbreviation[2] of the southwest wing of the Propylaea necessitated a wall which, in order to close the incomplete hip roof on the south, was carried up in the form of a hall gable, forming the fifth gable in the building. The horizontal entablature was returned on this south wall for only the width of the anta; the geison was stopped by a plain projecting block against which the mouldings abutted (Fig. 15); and beyond this rose the coursed masonry wall, which finished at the top in a ramping outline which was first noticed by Professor Dörpfeld. He proved that on this ramp wall fitted a series of geisa which had been built into the Florentine tower, and which Bohn had used, in spite of their exceptional forms, to show that a gable had existed above the north front of the southwest wing; Dörpfeld found that there had been eleven geisa, of which he had nine; one ordinary block was missing, and likewise the angle block which had evidently been broken up on account of its awkward shape, useless for building into a wall. I shall, therefore, merely add some details to what has already been published by Dörpfeld.[3]

In the first place, however, a slight change must be made in Dörpfeld's arrangement of the raking geisa. On their tops are pry-holes; when two happen to appear on the same stone, they

[1] This was first noticed by Hoffer, *l.c.*, p. 121; see also Bohn, *l.c.*, p. 20.

[2] W. Dörpfeld, *Ath. Mitt.* X, 1885, pp. 41–47, pl. II.

[3] *Ath. Mitt.* X, 1885, pp. 131–144, pl. V.

are about 0.635 m. apart, and so are clearly intended for the type of roof tile used in the west wings of the Propylaea, with an exposed length (on the slope) of 0.637 m. The geisa must, therefore, be arranged so that all the pry-holes will be uniformly spaced, and this causes the missing regular block (which Dörpfeld names *E*) to fit the fourth place, counting from the lower angle, instead of the third.

What rested on these geisa has remained in great uncertainty. Bohn, placing them in pediments facing toward the central building, admitted that their sima could not be identified, and restored one with an ovolo profile reduced from the main cornice.[1] Penrose, who placed the geisa on the wall to which they actually belonged, also restored an ovolo sima without evidence.[2] Dörpfeld, and, more recently, Wood, found no evidence which could be brought to bear upon this point. Whether these roof tiles were faced by some sort of sima, or by a high rim, as were the great tiles over the niches connecting the west wings with the central building, or merely by an overhanging nosing, as elsewhere on the west wings, remained unknown.

An important fact may be deduced from the geisa themselves. We have the stone (following Dörpfeld, it may be called *F*) which fitted next to the missing angle block (called *G*); it is noticeable that the lower joint of *F* coincides with a roof tile joint indicated by the pry-holes; both series of dimensions were, therefore, spaced from this point of coincidence. It is the same as what we found in the main pediments of the Propylaea; it can only be the result of the same gable angle construction, cutting the angle geison on the same block with the angle sima above. So the missing angle geison *G*, if found, should give us also the finish of these roof tiles.

In the centre of Figure 11 appears a small fragment found on the Acropolis, just northeast of the Propylaea. Below, it has a hawk's-beak moulding of exactly the same profile as that crowning the geisa of the west wings; above, we find part of a sima with a fascia of exactly the same height, forward inclination, and projection beyond the hawk's beak that we find in the nosing of the eaves tiles of the west wings — just as the

[1] Bohn, *Die Propyläen*, p. 23, pls. VII, X.
[2] Penrose, *Principles*, 2d ed., p. 68.

nosing of the eaves tiles of the side walls of the main building is repeated in the fascia of the sima of the main order. It was part of a gable, since its joint has the typical rebate for the overlap of the next sima and tile above; therefore, it belongs to the only gable connected with the west wings; and the rebate is at the right joint of the block, so that it came from the left slope of a gable, the only slope that appeared in the hall gable of the southwest wing. But unlike the other blocks of this gable,

FIGURE 11. — THREE SIMA FRAGMENTS ON THE ACROPOLIS.

geison and sima are here cut on the same stone, and, therefore, it can belong only to the missing angle stone *G*.

Though only a fragment, this shows that the sima had a reverse curve as if it were a *cyma recta*, unlike anything else in the Propylaea. By the aid of this fragmentary profile I was able to identify two other fragments (shown at left and right of Figure 11), and these give the complete profile of a so-called "Ionic sima," which in the Propylaea must have occurred in a startling combination with the Doric hawk's beak (Figs. 12 and 13). Besides the evidence of the identity of profiles, the two sima fragments themselves present fractures which exactly fit each other and give a complete length of 0.6355 m., which suits the regular tile length of 0.637 m. in the west wings, but totally disagrees with that of the tiles of any other building on the Acropolis.

We are now for the first time able to associate with the Propylaea a *cyma recta*, and this becomes of importance when

we notice that this profile, the "Ionic sima," is not in regular use until well after the fifth century. A review of its development, however, will show that there is nothing inconsistent in this seeming mixture of Doric and Ionic elements, and that we have here one of the steps in the history of architectural form.[1] The earliest suggestion of the *cyma recta* is seen in the Doric hawk's-beak moulding, especially after it was refined and undercut as a reverse curve.[2] Of the positions in which the hawk's beak was used, that which most concerns us is its frequent occurrence as the topmost moulding of a complicated series decorating the terra-cotta facing of poros geisa, as in temple *C* at Selinus;[3] above this was some sort of sima. This use of the hawk's beak crowning the geison later became characteristic and was perpetuated in poros and marble throughout Greek

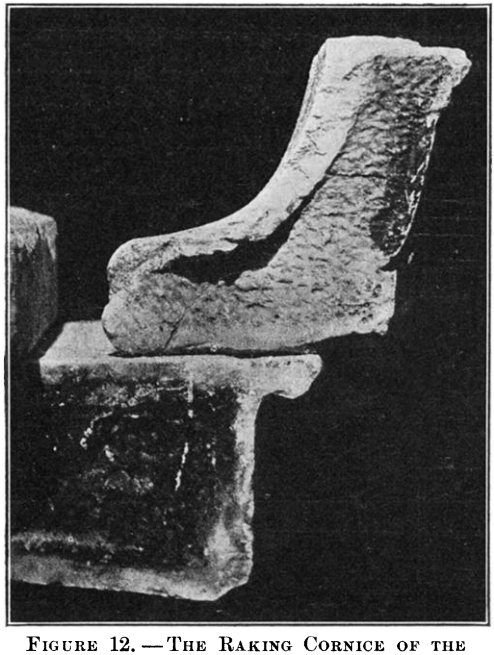


FIGURE 12. — THE RAKING CORNICE OF THE SOUTHWEST WING.

[1] I treat this question the more fully because the latest authority on the subject, M. Schede, in his *Antikes Traufleisten-Ornament* (Strassburg, 1909, p. 14), merely says of the "Ionic sima" that it is related to the Doric hawk's beak, that it appeared in the provincial temples of Bassae and Messa, and finally became standard in Ionia in the fourth century.

[2] In an unusual local development in the "Poseidon" temple at Paestum, an almost perfect *cyma recta* is used instead of the hawk's beak on the frieze *antithemata* and the anta capitals; but this is without further significance, having had no influence elsewhere.

[3] Dörpfeld, Gräber, Borrmann, Siebold, *Über die Verwendung von Terrakotten am Geison und Dache griechischer Bauwerke. 41stes Winckelmannsprogramm*, Berlin, 1881, pls. II, 1, III, IV, 1.

Doric architecture. But in the archaic period it sometimes happened that this entire series of mouldings was raised *above* the geison and in itself formed the sima, with the hawk's beak as the topmost member; this is illustrated by examples from temples *C* (gables only)[1] and *F*[2] at Selinus, the temple of Heracles at Acragas,[3] a fragment from Olympia,[4] and later in a limestone sima of the early part of the fifth century from the temple at Himera.[5] This is but a step from the sima in the form of a *cyma recta*, and once, in a building at Olympia

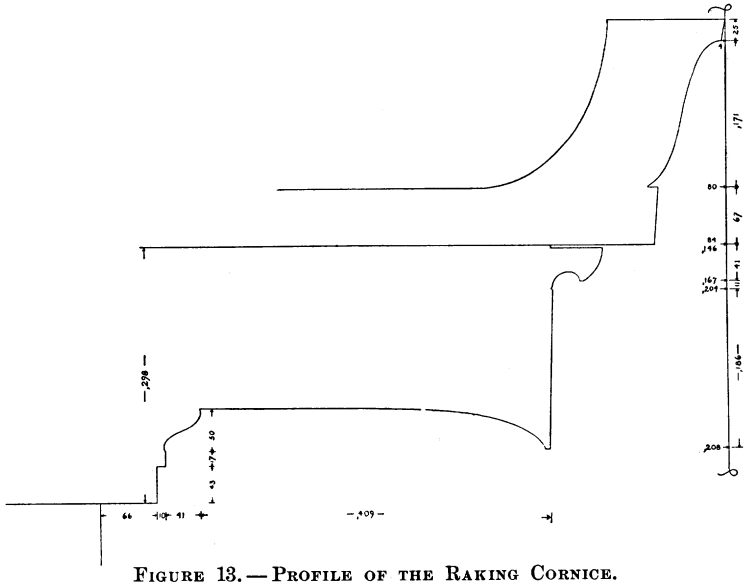


FIGURE 13. — PROFILE OF THE RAKING CORNICE.

(perhaps one of the earlier treasuries), this step was taken, and we find a terra-cotta sima with the true *cyma recta* profile — and yet, in recognition of its hawk's-beak origin, it is painted with the vertical leaf ornament characteristic of the hawk's

[1] Dörpfeld, Borrmann, *et al.*, *Terrakotten*, pl. II, 2, 3.

[2] Hittorff, Zanth, *Monuments antiques de la Sicile*, pl. LVI, 1, 2; Koldewey-Puchstein, *Die Griechischen Tempel*, p. 119; Durm, *Baukunst der Griechen* (2), pp. 135, 137.

[3] Hittorff, *Temple d'Empédocle*, pl. X, 2; Koldewey-Puchstein, *l.c.*, p. 149; Durm, *l.c.*, p. 135.

[4] *Olympia: Ergebnisse*, Text II, p. 202, Fig. 26.

[5] Koldewey-Puchstein, *l.c.*, p. 51; Durm, *l.c.*, p. 138.

beak alone.[1] But this instance was almost an accident,[2] and was unique among simas until we come down to the date of the Propylaea. It seems, therefore, that to the same spirit which led Mnesicles to find an unprecedented decoration, the egg-and-dart, for the sima of his main order, we owe the employment of a new profile for the sima of his secondary order.

One can hardly overestimate the importance of this invention of the *cyma recta*, the most familiar of all mouldings; it was an invention, the beginning of a continuous development. Soon after the cessation of work on the Propylaea, Ictinus borrowed this form for the pediments of the temple of Apollo near Phigalia, with some enrichment of the upper and lower mouldings.[3] Then, toward the end of the century, it appeared in the second temple of Apollo at Delos,[4] erected by the Athenians.[5] These three, the Propylaea, and the temples at Bassae and Delos, all designed by Athenian artists, give the earliest examples of the developed *cyma recta* in Greek architecture. Its use in them, and its entire preliminary development, show that it was so far essentially a Doric moulding.

Previously in Ionic architecture the prevailing type was the vertical parapet with reliefs, appearing in terra-cotta in the temple at Neandria[6] and in that of the Dictaean Zeus in Crete,[7] and in marble in the sixth-century temple at Ephesus,[8] the Ionic temple at Locri Epizephyrii,[9] and the three Ionian treasuries at

[1] *Olympia: Ergebnisse*, Text II, p. 194; Atlas II, pl. 118, 2 a.

[2] One or two other sporadic cases occur (but not on simas), as the cap of the pedestal of Antenor at Athens (*Ant. Denk.* I, p. 43, Fig. 5), likewise decorated with the broad Doric leaves and merely an outgrowth of such hawk's-beak forms as on the pedestal of Aeschines (*Ant. Denk.* I, pl. 29, 1) with the upper portion omitted.

[3] Stackelberg, *Apollotempel von Bassä*, p. 45; Blouet, *Expédition de Morée*, II, pl. 19; Cockerell, *Temple at Bassae*, pls. 3, 6, 8.

[4] Blouet, *Expédition de Morée*, III, pl. 7; photographs of German Institute at Athens, *Mykonos*, 16, 17 a, 17 b; Schede, *l.c.*, pl. IV, 26.

[5] Karo, *Arch. Anz.* 1908, pp. 143–144.

[6] Koldewey, *Neandria: 51stes Winckelmannsprogramm*, Berlin, 1891, p. 48.

[7] Bosanquet, *B.S.A.* XI, 1904–05, pp. 300–303, pl. XV; Savignoni, *Röm. Mitt.* XXI, 1906, pp. 64–82, pl. II.

[8] Hogarth, *British Museum Excavations at Ephesus*, London, 1908, pp. 300–301.

[9] Koldewey-Puchstein, *Die Griechischen Tempel*, p. 7.

Delphi.[1] It is near the end of the fifth century before we first find the *cyma recta* in an Ionic building,[2] the Erechtheum.[3] From the Erechtheum this type seems to have crossed into Ionia through two channels early in the fourth century, first, when parts of the Erechtheum order were copied in the "Nereid Monument" at Xanthus, and again, when in the temple at Messa in Lesbos,[4] the traditional Ionic vertical parapet was retained on the eaves, while the pediments had the new *cyma recta*.[5] Thence, adopted to the exclusion of all other forms by the Ionian schools of the second half of the fourth century,[6] it spread throughout Hellenistic Greece and the Roman world, and has since been more frequently employed than any other form of moulding.

Of the ornament of the sima of the southwest wing I could detect no trace; yet, coming just above a hawk's beak on which

[1] Published with doubtful identifications as: (1) "Cnidian," *Fouilles de Delphes*, IV, pls. 16–17; (2) "Siphnian," *B.C.H.* XXIV, 1900, p. 603, Fig. 5; (3) "Phocaean," Perrot and Chipiez, *Histoire de l'Art*, VIII, p. 391, Fig. 182.

[2] Its use in the temple of Athena Nike, as restored by Ross, Schaubert, and Hansen, has long been known to be false (see Le Bas, *Voyage archéologique, Architecture*, I, pls. 6, 8; and Stevens, *A.J.A.* XII, 1908, pp. 398–405); and for its companion temple, that on the Ilissus, no sima was found, though Stuart and Revett (*Antiquities of Athens*, I, ch. II, pl. 6) restored a "conventional" *cyma recta*.

[3] To be sure, nothing of the Erechtheum sima has been satisfactorily identified; the extant pieces which come from the main building belong to a Roman repair, the sima of the north porch is unknown, and that of the north door is again a repair, probably Roman. Penrose's attribution to the north porch of a sima in relief (*Principles*, 2d ed., p. 88) cannot be accepted without question. But the entire lintel of the north door is certainly a copy of the original, at least as high as the bottom of the sima; and the sima decoration agrees so well with the other types of anthemia in the north porch that we must consider this, too, a copy. Moreover, the Roman sima of the main building is probably a copy, in profile at least, of the original, for this same profile was copied, with other details of the Erechtheum, in the "Nereid Monument" at Xanthus.

[4] Messa may have obtained the sima directly from the Erechtheum, since here, too, the frieze is of a dark material, a red stone (Koldewey, *Insel Lesbos*, p. 55), contrasted with white elsewhere; and the very existence of a frieze here points to Attic influence. (H. Thiersch, *Jh. Oest. Arch. I.* XI, 1908, p. 53.)

[5] Koldewey, *Insel Lesbos*, pls. 21, 26, figs. 10–11.

[6] It likewise appeared in a few later Doric examples, as the Hellenistic temple of Apollo at Delos (unpublished; phot. of German Inst. at Athens, *Delos* 29), Temple *B* at Selinus (Koldewey-Puchstein, p. 94, Fig. 67) after 240 B.C., and the portico of Philip V at Delos (Blouet, *Expédition de Morée*, III, pl. 6), *ca.* 200 B.C.

the traces of painted leaves are still visible, it can hardly have been devoid of color. Probably it was the well-known anthemion, which became characteristic of the *cyma recta;* for we find this ornament carved in relief on the similar simas of Bassae, the second and Hellenistic temples at Delos, and practically all Ionic examples.

The finding of one fragment of the angle geison *G* brings up the question of the restoration of the whole block. The gable sima must have returned along the eaves on the west side for some distance, but it could not have been far, since the

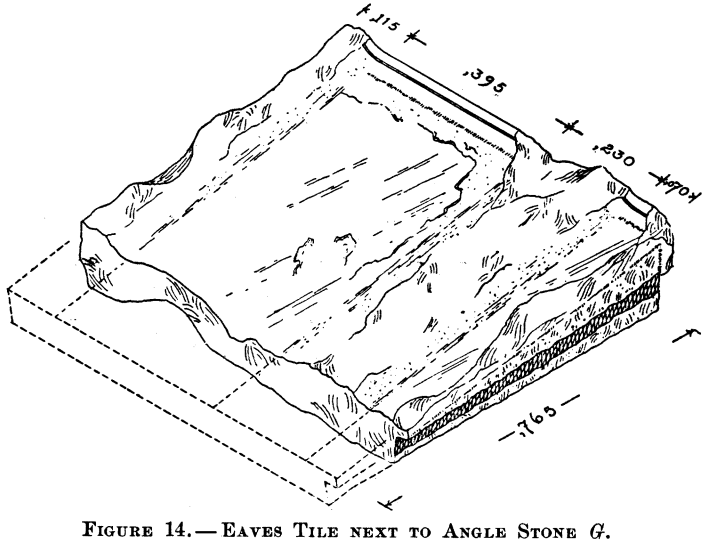


FIGURE 14. — EAVES TILE NEXT TO ANGLE STONE *G*.

numerous eaves tiles show no trace of a sima. One of these eaves tiles, however, is unlike the others (Fig. 14); an additional piece is added at the right of a regular tile, and furnished with a tongue which was intended to overlap a rebate in another stone, thus closing the joint. The length of bed, from front to back, is not the typical 0.720 m. of the eaves tiles all around the west wings, but the special 0.765 m. used only on the west cornice of the southwest wing. The extra strip of tile is 0.185 m. wide, of which about 0.030 m. is the projection of the tongue so that the extra amount of bed is only 0.155 m. Now when we space off the antefixes marking the regular tile

joints on the west cornice of the southwest wing, beginning with those determined by the triglyphs at the north, the last falls 0.385 m. inside the outer face of the south wall. But the north end of stone *G* was only 0.228 m. inside the wall line,

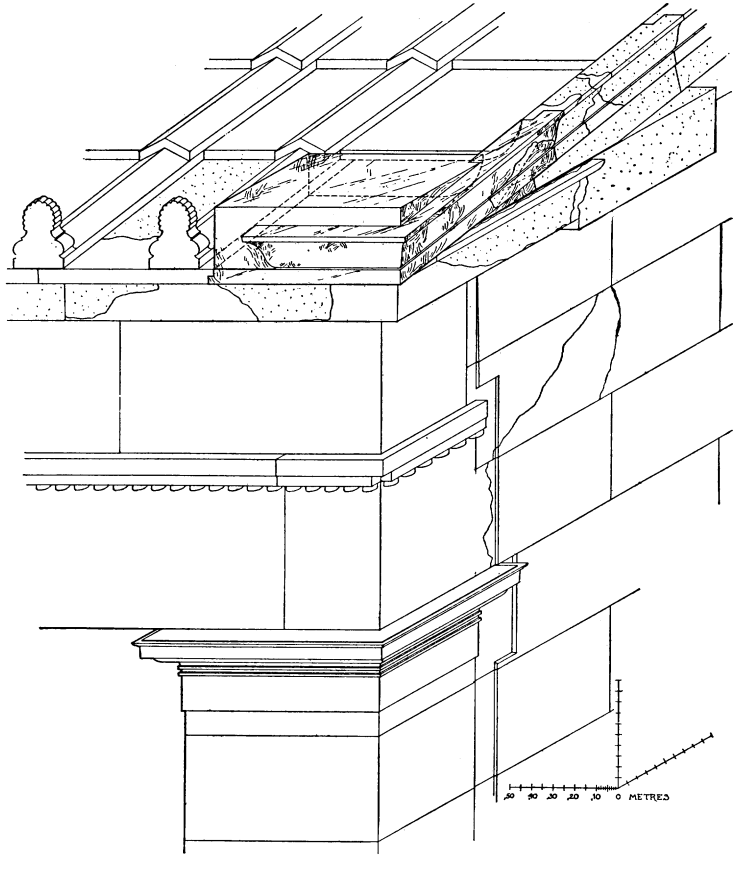


FIGURE 15. — ANGLE GEISON *G* AND ADJACENT STONES.

as shown by a cutting and the stopping of the anathyrosis on the adjacent geison *F*,[1] and a corresponding weather line on the horizontal geison *P* which formed the bed of stone *G*. The actual joint was then 0.157 m. south of the pretended joint marked by the last antefix, and this exactly fits our

[1] Drawn by Bohn, *Die Propyläen*, pl. XVIII, 14 *β*.

special tile.[1] In cases of the omission of the eaves sima, in marble construction at least, the return of the gable sima ends behind a false lion's-head spout,[2] which is carved on the angle acroterion base.[3] The acroterion base continues onward in the Parthenon, to the centre of the first cover tile, so that the first antefix is half cut in relief on the acroterion base;[4] at Aegina the acroterion base stops short of the cover tile, and the first antefix stands free.[5] In the Propylaea the evidence of the unique eaves tile points to the Aeginetan type; but at Aegina the small strip of flat tile lying between the acroterion base and the antefix was cut on the acroterion block, while in the Propylaea it was cut on the last eaves tile, with a tongue fitting a rebate on the acroterion base (Fig. 5). The height of the acroterion base, when attached to an antefix as in the Parthenon, equals that of the antefix; at Aegina and Bassae it was free, and was slightly higher. In the case of the Propylaea, the fragment of stone *G* has about 31 cm. of tile surface which must have come behind the acroterion base, limiting the latter to about 50 cm. from front to back, and this, with the given slope of the gable, allows a height of about 28 cm., whereas the antefixes are 0.312 m. high.

WILLIAM BELL DINSMOOR.

ATHENS, 1909.

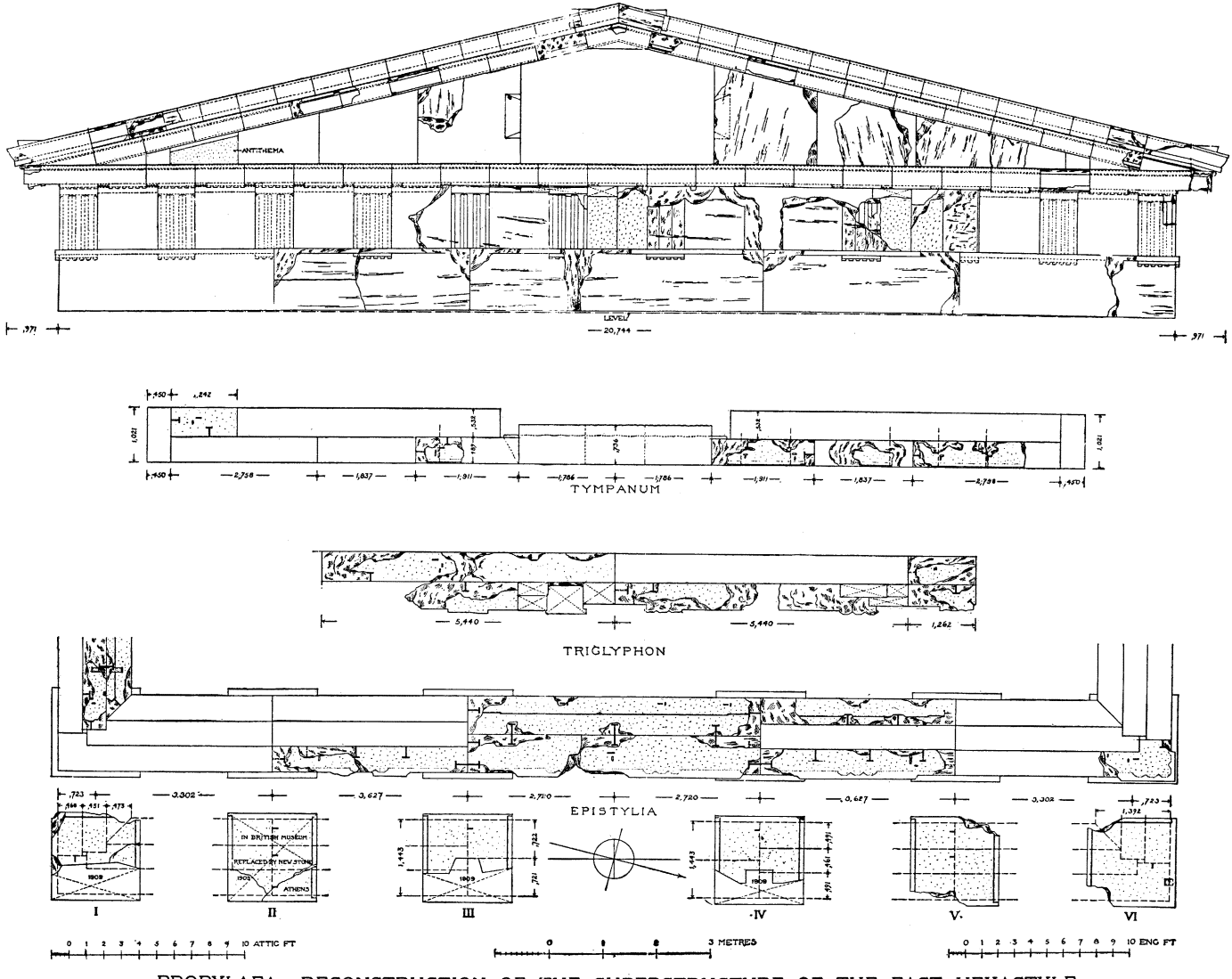
[1] A dowel hole for a tile on the north edge of horizontal geison *P* exactly fits one in the north edge of our tile, so that the entire bed of the tile (except about 3 cm.) was on *P*; but the north end of *P* is broken off from the main portion, and the two fractures do not fit, so that the amount missing must be determined by the spacing of the tiles.

[2] No lions' heads were found at Bassae, but Cockerell (*Temple at Bassae*, p. 50) and Blouet (*Expédition de Morée*, II, p. 8) agree in restoring them.

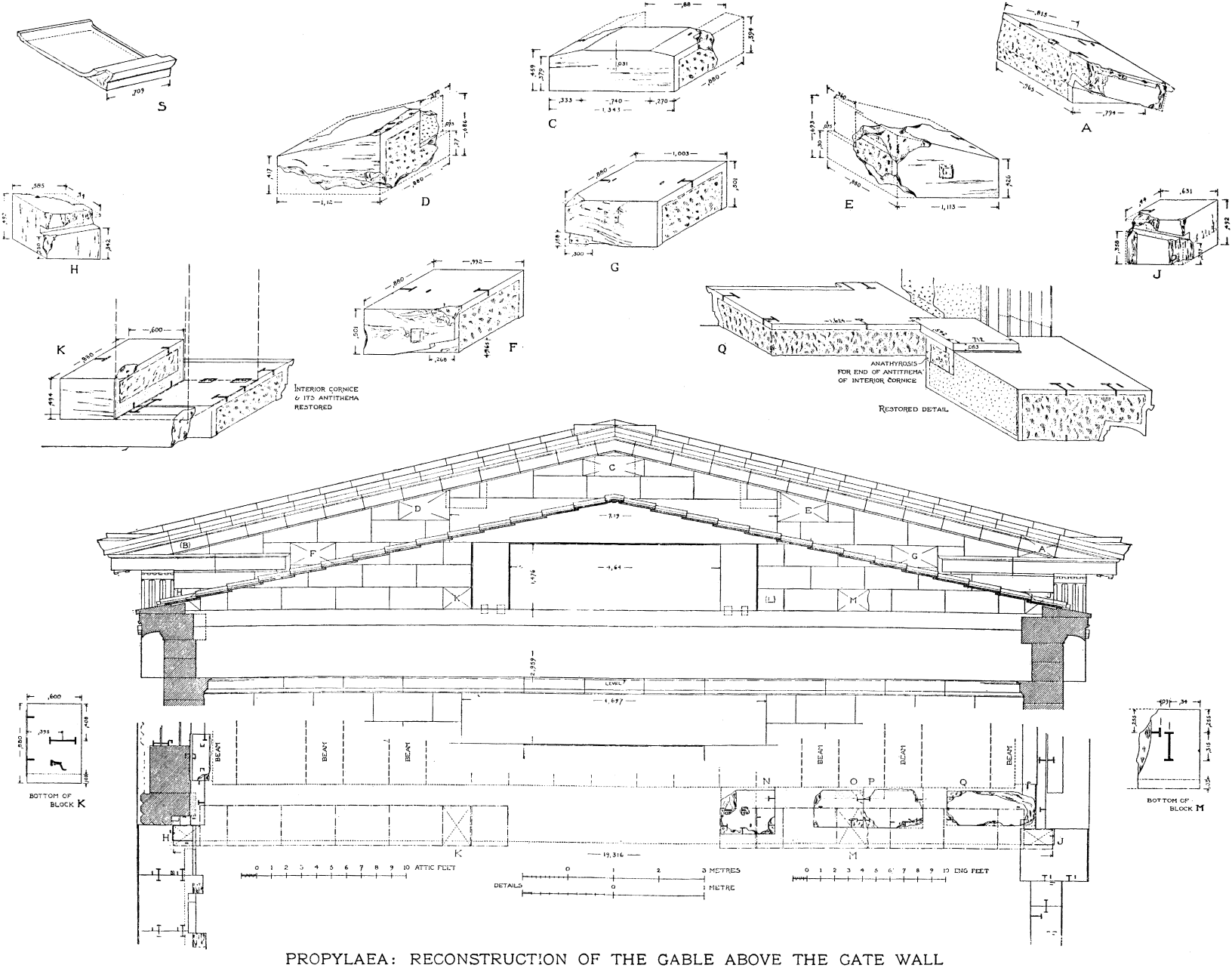
[3] In the case of the Propylaea, we should probably omit the lion's head, that it might not be unique in the entire design; the sima could then return back into the acroterion base, after a proper interval, just as the crowning moulding of the geison returns into the plain block on the south wall of the wing.

[4] Laborde, *Le Parthénon*, Paris, 1848, pl. 45.

[5] Furtwängler, *Aegina*, pls. 35, 47.



PROPYLAEA: RECONSTRUCTION OF THE SUPERSTRUCTURE OF THE EAST HEXASTYLE



PROPYLAEA: RECONSTRUCTION OF THE GABLE ABOVE THE GATE WALL